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comparatively low form, in which the stem is commonly as broad as high. Of twenty-one species distinguished all but one are new.

D. P. P.

GEOLOGY.

Maryland Geological Survey. — The two handsome volumes, of which the second has quite recently been issued, representing the first publications of the Maryland Geological Survey,¹ under the direction of Prof. William Bullock Clark of Johns Hopkins University, are a credit to the Maryland Commission, and show clearly the advantage enjoyed by the Maryland geologists in their proximity to the offices of the federal Survey at Washington, and in their immediate association with the scholarship of Johns Hopkins University. A cursory examination of these volumes shows that the functions of a State Survey for the people of the state, in giving to them accurate information concerning maps, economic products, and topographic advantages, are distinct from those of the federal Survey, while at the same time it is very evident that coöperation with the United States Geological Survey is essential to such work. In the establishment of this Survey the legislature acted wisely in appointing the presidents of the two leading colleges members of the Commission; and the eleventh Resolution of the Commission, asking official coöperation from the head of the United States Geological Survey and from the directors of the geological surveys in neighboring states, has had much to do with the high grade of work shown by the Survey's first publication. For the execution of this work unstinted praise is due to Professor Clark and his assistant, Dr. Mathews.

In the first volume, "issued to set forth the organization of the Survey, and to show what has hitherto been done in the study of the geology, natural history, and resources of Maryland," the plan of operation of the Survey is stated concisely; a very complete statement of the physiography, geology, and mineral resources of Maryland has been compiled by Professor Clark, with a most scholarly historical sketch of earlier investigations. Dr. Mathews contributes a bibliography and cartography of Maryland, which is one of the most complete of its kind that we have seen. It is arranged in chronological order, and includes works from 1526 to 1896 inclusive,

¹ *Maryland Geological Survey*, vol. i (1897), 539 pp.; vol. ii (1898), 509 pp., plates and maps. Baltimore, The Johns Hopkins Press, 1897-98.

with a brief summary of each work. L. A. Bauer contributes a chapter on magnetic work, with a preliminary isogonic map of the state. In addition to the usual study of economic products, the plan of the Survey embraces a special investigation of road materials, of artesian well prospects, of water power, and of the physiographic features of the state. A geological map of the state, published in coöperation with the United States Survey, is incorporated in the volume, with also many photographic illustrations, a view of the topographic model of Maryland, index maps showing the progress of work of the United States Survey, and a hypsometric map.

The second volume is even more attractive than the first, the half-tone illustrations being supplemented by numerous photogravures on heavy paper, and colored plates showing the intimate structure of polished slabs of building stone which are, in the opinion of the reviewer, the most perfect reproductions of natural rock surface that have ever been made. Especially remarkable is Plate II, a granite porphyry from Ellicott City, in which even the cleavage fractures on the surface of the feldspar crystals and the semi-transparent appearance of the fracture edges are portrayed with perfect accuracy both as to color and form. After the administrative report of the superintendent, this volume contains a full account of Maryland building stones, by Dr. Mathews, with an introductory chapter on the physical, chemical, and economic properties of building stones, including methods of testing, by George P. Merrill. Dr. Mathews's work appears again in the third part of the report, in an exhaustive historical review of the maps and map-makers of Maryland. It is in these historical chapters that the first volumes of the Maryland Survey especially excel, and in them is shown the advantage of the extensive library facilities of Baltimore and Washington. Henry Gannett, of the United States Geological Survey, contributes a summary of the aims and methods of modern cartography, giving from his wide experience a systematic account of the object of the modern topographic map, the methods employed to-day in the government office, and figures and formulæ illustrating the use of instruments. This chapter by itself is of great value in giving to the public a statement of the latest methods of topographical surveying, with excellent photographic illustrations of the several instruments employed.

The second volume shows the success of the first efforts of the State Survey in impressing on the people of the state the value of its work, in that the General Assembly of 1898 passed special bills appropriating money for the extension of the topographic survey

and for the investigation of scientific methods of highway construction, following the lead, in this last respect, of the State of Massachusetts.

T. A. JAGGAR, JR.

PETROGRAPHY.

Granites and Diabases. — Milch's¹ article on the granitic rocks of the Riesengebirge and Bodmer-Beder's² paper on the olivin diabase from the Plessurgebirge in the Grisons are monographic presentations of the subjects they discuss. In the first, the author describes in great detail, and with a wealth of chemical analyses, the well-known granite of the Riesengebirge, together with its basic and acid phases and the concretions they contain. Chemically, the rock is a mixture of Rosenbusch's granitic and dioritic magmas. The acid and basic phases are regarded as differentiation products of the magma that yielded the normal rock. Even the dike granites and the pegmatites of the district are looked upon as "Schlieren" in the granitic magma, formed by the solidification of the mother liquor left after the greater portion of the magma had crystallized. The basic phases of the rock often present the features of kersantites. They appear as concretions in the granite and as dark "Schlieren" traversing it.

The diabases of the Plessurgebirge in the neighborhood of Chur occur as stocks, as horizontal sheets, and as dikes in the predominant limestone. In the center of the stocks its structure is granular; nearer the peripheries of the masses it is ophitic, and on the peripheries it is vitrophyric. Varioles and vacuoles are present as contact phenomena. The former are spherulites of radial plagioclase, and the latter amygdaloidal cavities that have been filled with albite, quartz, and calcite. The rocks present no unusual features, but the paper is worth examination because of its thoroughness in describing and picturing each structural form of the rock investigated and of its constituents.

Granitic Oceanic Islands and the Nature of Laterite. — The small group of tropical oceanic islands, known as the Seychelles, are noteworthy from the fact that they are neither of coral nor of volcanic origin, but are granitic in character. Bauer³ reports that they consist principally of granites, and syenites cut by dikes and covered

¹ *Neues Jahrb. f. Min.*, Bd. xii, p. 115.

² *Ibid.*, p. 238.

³ *Neues Jahrb. f. Min.*, etc. Bd. ii (1898), p. 163.